

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1.(currently amended): A method of producing a glass substrate for a mask blank, in which a surface of the glass substrate is polished by the use of a polishing liquid containing abrasive grains, wherein:

the abrasive grains comprise colloidal silica abrasive grains produced by hydrolysis of an organosilicon compound, and

the polishing liquid has a pH value between 7.0 and 7.6.

2. (currently amended): A method of producing a glass substrate for a mask blank, in which a surface of the glass substrate is polished by the use of a polishing liquid containing ~~colloidal silica~~ abrasive grains, wherein:

the polishing liquid comprise colloidal silica abrasive grains and has a pH value between 7.0 and 7.6.

3. (Original): A method according to claims 1 or 2, wherein:

a content of alkali metal in the colloidal silica abrasive grains is 0.1 ppm or less.

4.(currently amended): A method of producing a glass substrate for a mask blank, comprising a polishing process of polishing a surface of the glass substrate by the use of a polishing liquid containing ~~colloidal silica~~ abrasive grains, ~~by moving a polishing member and the glass substrate relative to each other while the polishing member is pressed against the surface of the glass substrate under a predetermined pressure,~~ wherein:

the polishing liquid comprise colloidal silica abrasive grains,

the polishing process comprising comprises;

~~a surface roughness control step of polishing the surface of the glass substrate under a polishing pressure to finishing~~ the surface of the glass substrate to a predetermined surface roughness by moving a polishing member and the glass substrate relative to each other while the

polishing member is pressed against the surface of the glass substrate under a predetermined pressure, and

a protrusion suppressing step, following the surface roughness control step, of applying a suppressing pressure lower than the polishing pressure to suppress occurrence of fine convex protrusions controlling to a pressure lower than the predetermined pressure in order to minimize a polishing rate and suppressing occurrence of a fine convex protrusion generated immediately before an end of the polishing process by moving the polishing member and the glass substrate relative to each other, and wherein

the surface roughness control step and the protrusion suppressing step constitute a series of steps in the polishing process and the protrusion suppressing step is carried out immediately before the end of the polishing process.

5. (Original): A method according to claim 4, wherein:

the pressure applied to the substrate in the protrusion suppressing step is 100 g/cm² or less.

6. (withdrawn): A method of producing a glass substrate for a mask blank, comprising a step of cleaning a surface of the glass substrate by a cleaning liquid after the surface of the glass substrate is precision-polished by the use of a polishing liquid containing colloidal silica abrasive grains, wherein:

the cleaning liquid has an etching action to the glass substrate and a stronger etching action to impurities, such as metal particles, contained in the polishing liquid and adhered to the glass substrate.

7. (withdrawn): A method according to claim 6, wherein:

the cleaning step is carried out by the use of the cleaning liquid containing hydrofluoric acid (HF) and/or fluorosilicic acid (H₂SiF₆).

8. (currently amended): A method according to any one of claims 1, 2, and 4 and 6, wherein:

the glass substrate is one of a glass substrate for a phase shift mask blank to be exposed by an ArF excimer laser, a glass substrate for a phase shift mask blank to be exposed by an F₂ excimer laser, and a glass substrate for a EUV reflective mask blank.

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9. (currently amended): A method of producing a mask blank, wherein:
a thin film for causing an optical change in exposure light is formed on a principal surface
of the glass substrate produced by the method according to any one of claims 1, 2, and 4 and 6.

10. (original): A method of producing a transfer mask, wherein:
the thin film of the mask blank produced by the method according to claim 9 is patterned
to form a thin film pattern on the glass substrate.

11. (withdrawn): A method of producing a semiconductor device, wherein:
a fine pattern is formed on a semiconductor substrate by lithography using the transfer
mask produced by the method according to claim 10.

12. (withdrawn): A glass substrate for a mask blank, wherein:
the glass substrate has a principal surface,
the principal surface contains Si and O as main components, and
the principle surface does not include fine convex surface defects having a height between
about 2 nm and about 7 nm.

13. (withdrawn): A mask blank, comprising:
the glass substrate according to claim 12, and
a thin film formed on the principal surface of the glass substrate to cause an optical change
in exposure light.

14. (withdrawn): A transfer mask formed by the use of the mask blank according to
claim 13 and having a thin film pattern formed on the glass substrate by patterning the thin film.

15. (new): A method according to claim 4, wherein:
the polishing rate in the protrusion suppressing step is 0.12 µm/min or